shown in Fig. 1, are two cup-shaped pits of 10 to 12 centimetres diameter, which constitute a remarkable feature; the smaller depressions or "thumb-marks" of 3 to 4 cm. diameter, which cover the remainder of the surface, are also reproduced in minute detail.

At the point where the fragments were removed, the octahedral cleavage and lines of crystallisation are noticeable to a degree rarely seen in iron. It is, however, on the etched surface—prepared through treating a polished slab with dilute nitric acid, in the usual manner—that the beauty of the crystalline structure is best seen. In this respect it ranks among the finest of recorded irons, the Widmannstätten figures being exceptionally regular and distinct. The accompanying print (Fig. 2) was made directly from the etched surface. The broad bands of kamacite are symmetrical, the prominence of the interlacing of shining white threads of the nickeliferous iron being especially remarkable, and distinguishing it from the El Capitan meteoric iron, weighing about 28 kilos, and found (Prof. E. E. Howell, *Amer. Journ. of Sci.*, vol. i. p. 253) in 1893, about ninety miles north of the Sacramento range. In the latter iron the percentage of iron is less and nickel greater, phosphorus also being present. For a careful quantitative analysis the writer is indebted to Mr. J. Edward Whitfield (with Booth, Garrett, and Blair, of Philadelphia), who obtained the following results:

Iron	91·39	per cent.
Nickel	7·86	,,
Cobalt	·52	,,
	99·77	

The mass is perfectly preserved, there being no sign of disintegration or exudation of lawrencite. The sawing done shows it to be quite soft and generally homogeneous. The entire lack of surface alteration proves that it fell at a comparatively recent date, and leads to the conclusion that it is the meteor seen to fall by Mr. Bartlett, whose account led to the discovery.

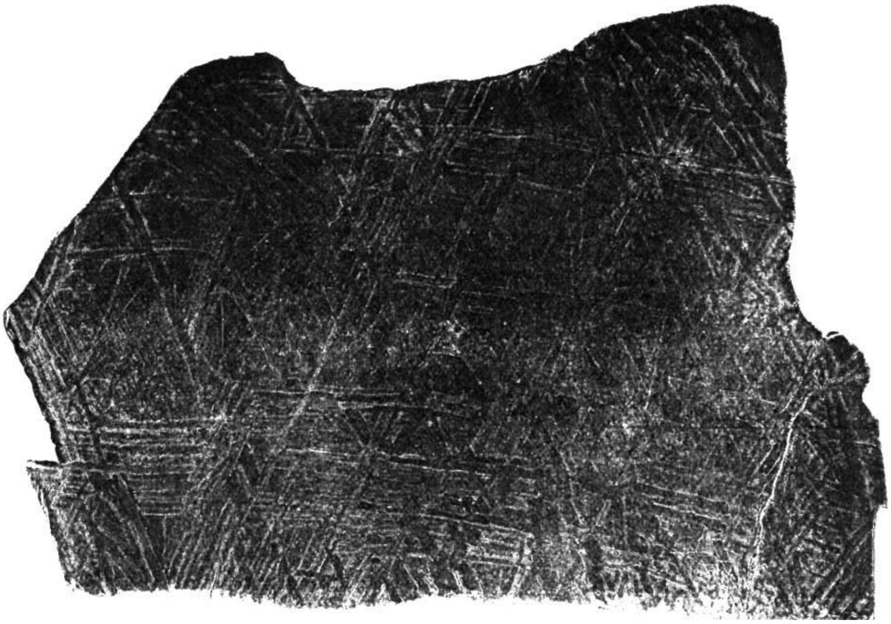

Fig. 2.—The Sacramento Mts. Meteorite. (Printed directly from the etched surface of the iron.)

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

The University of Edinburgh has conferred the honorary degree of LL.D. upon Prof. James Dewar, F.R.S., and Dr. John Wyllie.

The following are among recent appointments:—Mr. W J. Pope to be head of the Chemical Department of the Goldsmiths' Polytechnic Institute, New Cross; Dr. Julian Apricio to be director of the Meteorological and Astronomical Observatory of San Salvador; Dr. M. Kirchner to be professor of hygiene in the technical high school at Hanover; Dr. F. Pompeckj to be curator of the palæontological collection in the State Museum at Munich; Dr. F. Koch to be professor of chemistry at Klausenberg.

The Technical Education Board of the London County Council has decided to institute junior horticultural scholarships tenable at the gardens of the Royal Botanic Society. These scholarships are intended to offer to boys who wish to become gardeners an opportunity of going through a thorough course of training, and they will be awarded, not upon the results of a set examination, but upon a consideration of the record and qualifications of the candidates. Free instruction in horticulture will be provided, with a maintenance grant of 20*l.* per annum to scholars under fifteen and 25*l.* to scholars over fifteen. The scholarships will be awarded, in the first instance, for one year, but will be renewable for a second, or even for a third year, if the progress of the scholar is satisfactory. No candidate will be eligible for these scholarships whose parents are in receipt of more than 250*l.* per annum.

By an Act passed in 1889, a Commission was appointed for organising and extending the scope and teaching power of the departments of the Scotch Universities, and the effect of the Commissioners' ordinances on the University of Aberdeen was to add a new faculty—that of science—as well as to expand the four former faculties, and largely to increase the building requirements in respect of laboratories, museums, &c., in almost all the departments of the University, while it made no provision for supplying the buildings to accommodate them. The University was, in these circumstances, compelled to build, but had no funds for the purpose. In 1892 Mr. Goschen, then Chancellor of the Exchequer, agreed to give a grant of 40,000*l.* if the public subscribed a similar sum. An appeal was made, and 75,000*l.* were raised, which, with the Government grant, gave a total of 115,000*l.* This amount has been expended, while the works at present in progress entail a further liability upon the University of fully 21,000*l.* To meet this exigency, as well as to complete the buildings extension scheme, and the still urgent necessities of the University, a total sum of at least 40,000*l.* is required; and an urgent appeal has been sent out in the hope that those who are interested in this historic University will assist in the extension of its usefulness. Subscriptions will be received by the honorary secretaries of the Extension Fund: Mr. A. M. Gordon, of Newton, Convener of the County of Aberdeen; and Mr. P. M. Cran, City Chamberlain, Aberdeen.

The value of science as an instrument of education is now recognised by all educationists who have taken the trouble to consider the matter; but we hasten to say that the scientific knowledge must be gained by individual experience with the objects and phenomena of nature. This principle is so sound that its application is bound to extend. For some years experimental work in elementary science, on the lines suggested by Dr. H. E. Armstrong, has been carried on with great success in about fifteen selected schools under the London School Board. The results have been so satisfactory, that it has been felt that girls as well as boys ought to be given the same training in manipulation and common sense; and to further such an object, a meeting of about two hundred teachers took place on Saturday, April 3. The following resolutions formed the basis of discussion, and were carried *nem. con.*: (1) That there is great room for improvement in the methods of teaching domestic economy as commonly practised in schools, and it is desirable that in

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future the teaching should be of a more exact nature, and such as to make the scholars think for themselves about the ordinary affairs of the household. (2) That the time is arrived when it is absolutely necessary to introduce into girls' schools of all grades, and from the outset of the school course, simple but accurate experimental work dealing with domestic matters. (3) That the meeting notes with satisfaction the introduction into the Code of the Education Department of the new subject domestic science as tending to the promotion of the changes suggested in the two preceding resolutions.

A LONG article by Sir Philip Magnus, in the April number of the *National Review*, carries on the crusade in favour of an improved organisation of scientific education and opinion as a means to industrial progress. He does not counsel slavish imitation of German methods, but shows that the advance of German manufacturing industry is largely due to a full and generous recognition of the great part played by science in national progress. It is instructive to compare Germany and England by means of sentences taken from different parts of Sir Philip Magnus' article.

Germany.	*England.*
The recognition of the advantages of scientific and technical education characterises all classes of society in Germany, and none more than employers of labour engaged in productive and engineering industry.	Unfortunately, there is considerable doubt among certain classes of manufacturers, and even among engineers, as to the value of education in assisting industry; and, judging from the treatment in Parliament of all educational measures, it would seem that our legislators are still unconvinced of the economic importance of the subject.
Between the elementary school and the technical high school or university there is an intelligible and well-coordinated system, which gives unity to the entire system of education.	At present our schools are only *disjuncta membra* of what we hope may one day become a system.
Care is taken that the influence of the Minister of Instruction, and of those who advise him, shall penetrate into every small rural School Board.	There is no responsible authority to supervise or grade our several educational institutions, so as to bring them into organic relation with one another.

General Conclusions.—German education is superior to our own in its appliances (schools and their equipment), methods of instruction, and organisation. The instruction is also more closely adapted to the wants and requirements of the people.

SCIENTIFIC SERIALS.

Bulletin of the American Mathematical Society, March.—On certain methods of Sturm, and their application to the roots of Bessel's functions, by Prof. M. Bôcher. This is a paper read before the Society at its February meeting, of which the purpose is to call attention to Sturm's methods, rather than to elaborate the details of the theory of the roots of Bessel's functions. These methods, which appear to have been overlooked, are given by Sturm in *Liouville's Journal*, vol. i. p. 136, &c. In addition to the Professor's own work, the paper discusses two recent proofs of theorems, really contained in Sturm's article, given by Messrs. Porter (a graduate student at Harvard) and Van Vleck (*American Journal of Mathematics*, xix. p. 75).—Dr. G. A. Miller, in a paper read at the January meeting, continues his work on groups. The article is on the transitive substitution groups, whose orders are the products of three prime numbers.—Note on the integration of a uniformly convergent series through an infinite interval, by Prof. T. S. Fiske, was also read at the same meeting. It illustrates a communication by Prof. Osgood, which was published in the November number of the *Bulletin*.—Short notices follow, by Prof. F. Morley, of Dr. L. Huebner's "Ebene und Räumliche Geometrie des Masses," and, by Prof. E. W. Brown, of the scientific papers of John Couch Adams.—Some points of interest are brought forward in the usual notes.

IN the numbers of the *Journal of Botany* for February, March, and April, Messrs. W. and G. S. West continue their description of the Fresh-water Algæ collected by Welwitsch in Africa, comparatively new ground; a large number of new and beautiful forms, and several new genera, being described and delineated. Mr. I. H. Burrill commences an elaborate article on the fertilisation of spring flowers on the Yorkshire coast, containing the results of a long series of careful observations, the general conclusions from which will appear in a later number.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 11.—"The Comparative Physiology of the Suprarenal Capsules." By Swale Vincent, M.B. (Lond.), British Medical Association Research Scholar. Received February 18.

The conclusions arrived at are as follows:—

(1) The suprarenal capsule of the mammalia corresponds to two distinct glands in Elasmobranch fishes, the medulla corresponding *in structure and function* to the "paired segmental" suprarenal bodies ("medullary glands" they may be called), while the cortex corresponds to the interrenal body.

(2) In Teleosts the medulla appears to be unrepresented, the known suprarenal bodies ("corpuscles of Stannius") consisting entirely of cortical substance, and corresponding in structure, and most probably in function, to the interrenal body of Elasmobranchs.

(3) The same is most probably true of Ganoids, although I am guided here solely by histological evidence; I have not been able to obtain sufficient and suitable material for physiological investigation.

Thus it appears from these researches that two primary groups of the class *Pisces* (Teleosts and Ganoids) have no "medulla" but only "cortex." So far as I know, the only piece of work published on the physiology of the suprarenal capsules in fishes is that of Pettit (12). This observer has made out a true physiological compensatory hypertrophy of one suprarenal in the eel after the other one has been removed. This renders it probable (what indeed was suggested by histological appearances) that this "cortical gland" has a secreting function. Pettit looks upon this organ in the eel as the fundamental type of the suprarenal capsule, but it appears to me much more probable that it represents cortex alone.

Physical Society, April 9.—Mr. Shelford Bidwell in the chair.—Mr. T. A. Garrett read a paper on a nickel stress telephone. In conjunction with Mr. W. Lucas, the author has experimented upon telephones with nickel magnets. A magnetised nickel rod is wound with insulated wire, and is then fixed vertically by a clamp at its lower end. A wooden diaphragm is rigidly attached to the top of the rod in a horizontal plane. The rod just passes through the middle of the diaphragm, where it is fixed with sealing-wax. The diaphragm is entirely supported by the nickel rod. On speaking against the top of the diaphragm, variations of longitudinal pressure, and consequently of magnetisation, are produced in the nickel, and corresponding undulatory currents are induced in the surrounding coil. The nickel wire is sometimes magnetised by stroking it with a magnet, and sometimes by passing a current through the coil. A diaphragm of pine-wood gives better results than a metallic plate. The instrument does not work well as a "receiver"; an ordinary telephone is used for this latter purpose. The results obtained with a weakly-magnetised nickel rod are much better than those with a strongly-magnetised steel rod, indicating that the undulatory currents are due rather to magnetic variations arising from changes of stress than to the relative motions of the magnet and coil. Dr. S. P. Thompson said that, some years ago, he had worked with a somewhat similar apparatus, using it as a "receiver," with wires of nickel, cobalt, and iron. Cobalt gave the best results; the metallic strips in his experiments dipped into the solenoids without contact with them. This arrangement did not work well as a "transmitter," even when a battery was included in the circuit. In some cases the rods were cut into short lengths separated by brass. Mr. Boys asked how the nickel "stress" instrument compared in clearness and loudness with an ordinary telephone. Mr. Shelford Bidwell had tried a nickel telephone

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